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A New Species of *Streblocera* (*Asiastreblocera*) (Braconidae: Euphorinae) from Thailand with Depressed Ovipositor

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Abstract.—A new species of euphorine braconid, ***Streblocera* (*Asiastreblocera*) *olivera* Quicke and Purvis, new species,** from Thailand is described and illustrated. This is the first record of the genus from SE Asia. The description uses SEM to illustrate several features, including the ovipositor and facial horn for the first time. *S.* (*A.*) *olivera* is distinguished from the other four described members of the subgenus.

Euphorine braconids are interesting because they attack adults of holometabolous insects and adults and nymphs of hemimetabolous ones. Probably related to this, the adults show a remarkable range of forms which are often believed to be associated with host manipulation, including remarkably derived antennae and ovipositors (Shaw 1988).

Streblocera Westwood is a diverse genus of principally tropical species that is currently divided into a number of subgenera, largely on the basis of the form of the antenna. The hosts of *Streblocera* species appear to be chrysomelid beetle adults (Maetô and Nagai 1985, Shaw 1985), though host records are unavailable for most species. The subgenus *S.* (*Asiastreblocera*) Belokobylskij was described on the basis of a single species from China (*S. cornuta* Chao 1964) (Belokobylskij 1987) and since then three additional species have been described, and collectively the known subgeneric range has been found to include from Taiwan and Korea (Wang 1983, Chou 1990, Ku 1997, Belokobylskij and Ku 1998). *Asiastreblocera* differs from all other *Streblocera* in having a facial horn, the antenna geniculate at the 1st flagellar segment which is not serrate but produced into a large ventral, flattened lobe, and in having a very short ovipositor that is not exserted. Recently we were able to study a series of a new species of *Streblocera* (*Asiastreblocera*) from Thailand collected by Dr Doug Yanega (University of California, Riverside), and this has given us the opportunity to obtain DNA sequence data for the subgenus, and to study the morphology of its modified antenna and ovipositor in more detail using scanning electron microscopy. Its D2-D3 28S rDNA sequence has been deposited in the EMBL database (accession number AJ302831) and will be incorporated into a forthcoming molecular phylogenetic study of the non-cyclostome braconids (Belshaw and Quicke, in press) and a combined molecular and morphological phylogeny of the Euphorinae (Quicke, Shaw and van Achterberg in preparation). We are describing this species here so as to make its name available for future publications.

TERMINOLOGY AND COLLECTIONS

Body morphology terminology follows Achterberg (1979, 1988); wing venation terms used follow Sharkey and Wharton

(1997). Collections are abbreviated as follows: The Natural History Museum, London (BMNH); University of California, Riverside (UCR).

Streblocera (Asiastreblocera) Belokobylskij

Type species: *Streblocera cornuta* Chao 1964.

Diagnosis.—The only euphorine subgenus that has either a facial horn or a single or paired ventral projection from the 5th metasomal sternite. See Chen and van Achterberg (1997) for additional features of the subgenus.

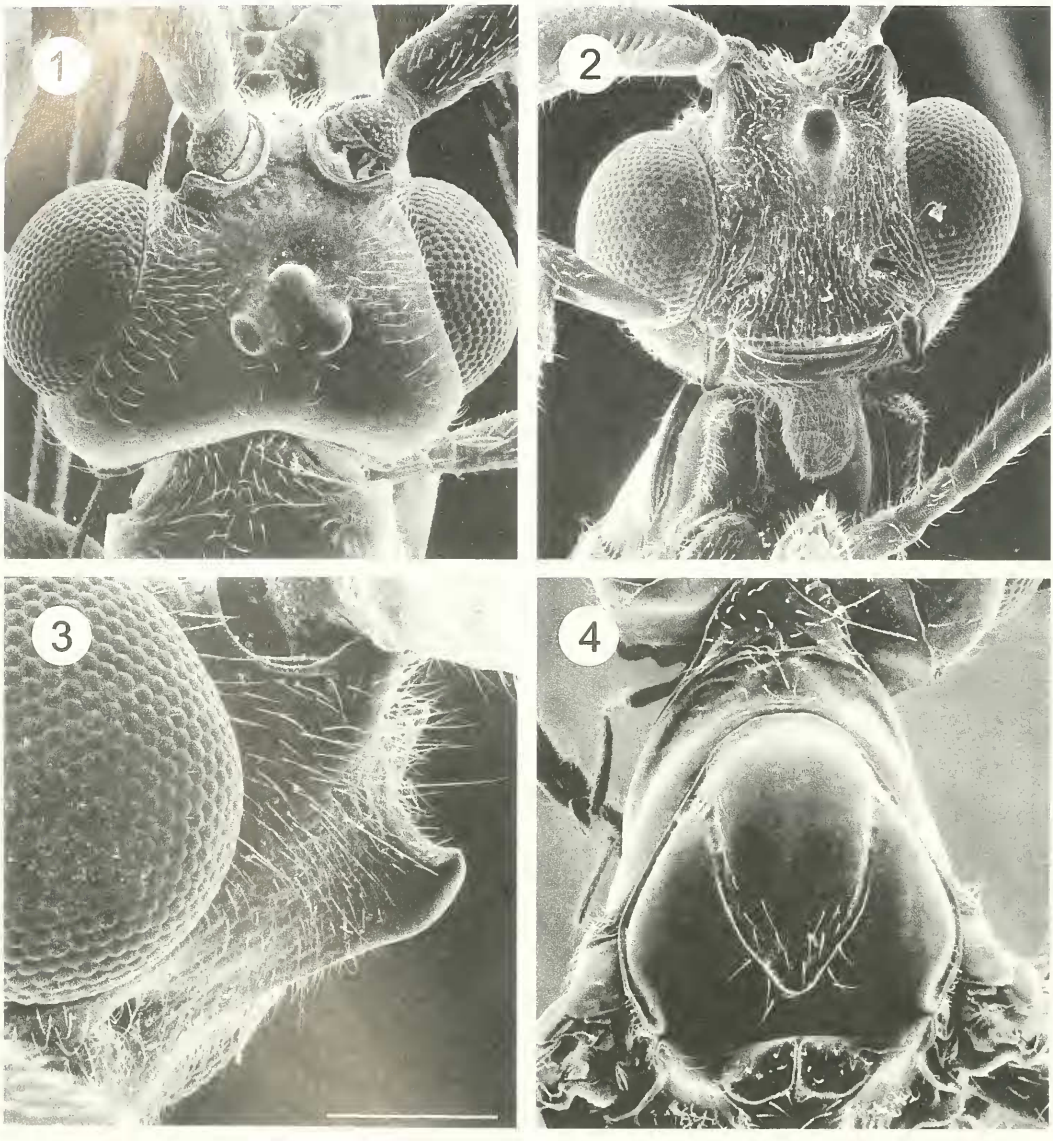
Distribution.—China, Korea, Taiwan, Thailand and Vietnam.

Streblocera (Asiastreblocera) olivera Quicke and Purvis, new species
(Figs. 1–16)

Holotype female.—THAILAND: 2km south of Ban Pha Bong (a small town south of Mae Hong Son), riparian forest, low elevation, 1.vi.2000, coll. D. Yanega (BMNH). Paratypes. 2 females, both with same data as holotype (one coated in platinum and used for scanning electron microscopy BMNH, the other deposited in UCR).

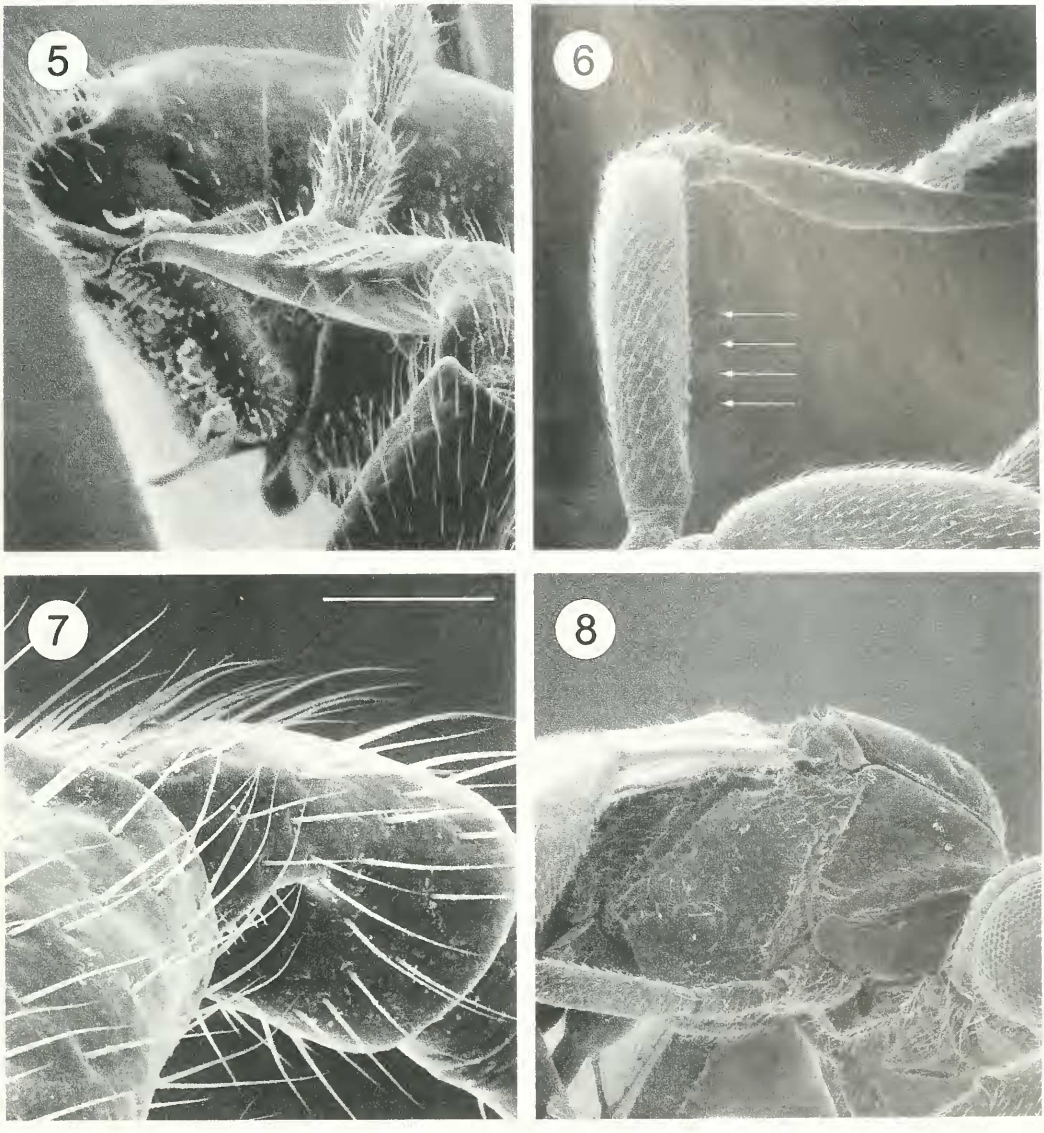
Diagnosis.—This species may be distinguished from all other *Streblocera* species by the possession of a single, non-furcate, medio-posterior projection from the 5th metasomal sternite.

Description.—Female. Body length 2.6 mm and of forewing 2.8mm. Antenna geniculate, 18-segmented, the terminal flagellomere partially divided on one side; scapus 1.56× longer than 1st flagellar segment which is strongly produced ventrally into lobe; pedicellus with notch ventrally containing discrete row of short, erect sensilla (Fig. 7). Scapus with 6–9 diagonal ridges medially (Figs. 2, 6); 1st flagellar segment with three diagonal ridges on the medio-ventral surface of the protruding lobe (Fig. 5). *Head*: 1.8× wider than medially long (excluding facial horn); 1.8× width of mesoscutum; largely smooth. Clypeus distinctly protruding from plane of face. Face densely setose (Figs. 2, 3). Face as wide as eye height; facial horn large, up-curved, apically blunt (transverse) in dorsal profile, without mid-longitudinal ridge (Figs. 1–3). Cheek height 0.26× height of eye, 1.0× basal width of mandible in frontal aspect. Distance between anterior tentorial pits: shortest distance from anterior tentorial pit to eye = 2.45:1.0. Width of head 2.35× width of face. Temple strongly narrowed behind eyes (Fig. 1). Transverse diameter of eye 4.0× length of temple (dorsal view). Eye 1.8× taller than wide in lateral aspect. Frons rather flat, medially glabrous, with slight pitting behind antennal sockets (Fig. 1). Transverse diameter of posterior ocellus: distance between posterior ocelli: shortest distance between posterior ocellus and eye = 1:2:3. Occipital carina absent medio-dorsally. *Mesosoma*: 1.7× longer (including neck-like pronotum) than maximally high. Pronope well-developed (Fig. 4). Mesoscutum smooth and shiny, virtually glabrous except along notauli which are weakly crenulate anteriorly. Notauli deep, largely smooth except for a few weak crenulae anteriorly; meeting medio-posteriorly in front of scutellar sulcus in a weakly depressed area with a few striae but no distinct midlongitudinal carina (Fig. 4). Scutellar sulcus long, with a single median carina (Fig. 4). Scutellum rather convex; medioposteriorly with a pair of pits (Fig. 10). Propodeum with median carina, on anterior 0.6 and with two pairs of strong transverse carinae; posteromedially with several short transverse carinae (Fig. 10). *Fore wing*: Vein 1-SR+M absent. Vein SR1 reaching wing margin 0.52 of distance from apex of pterostigma to the wing tip. Vein SR1 1.9× longer than m-cu. Vein 2-CU1 4× longer than 1-CU1. Vein r arising 0.63 distance from base of pterostigma. Pterostigma 3.0–3.1× longer than wide. *Hind wing*: Lengths of veins 1-M:1r-m:M+CU = 3.0:4.0:1.0. *Legs*: Length



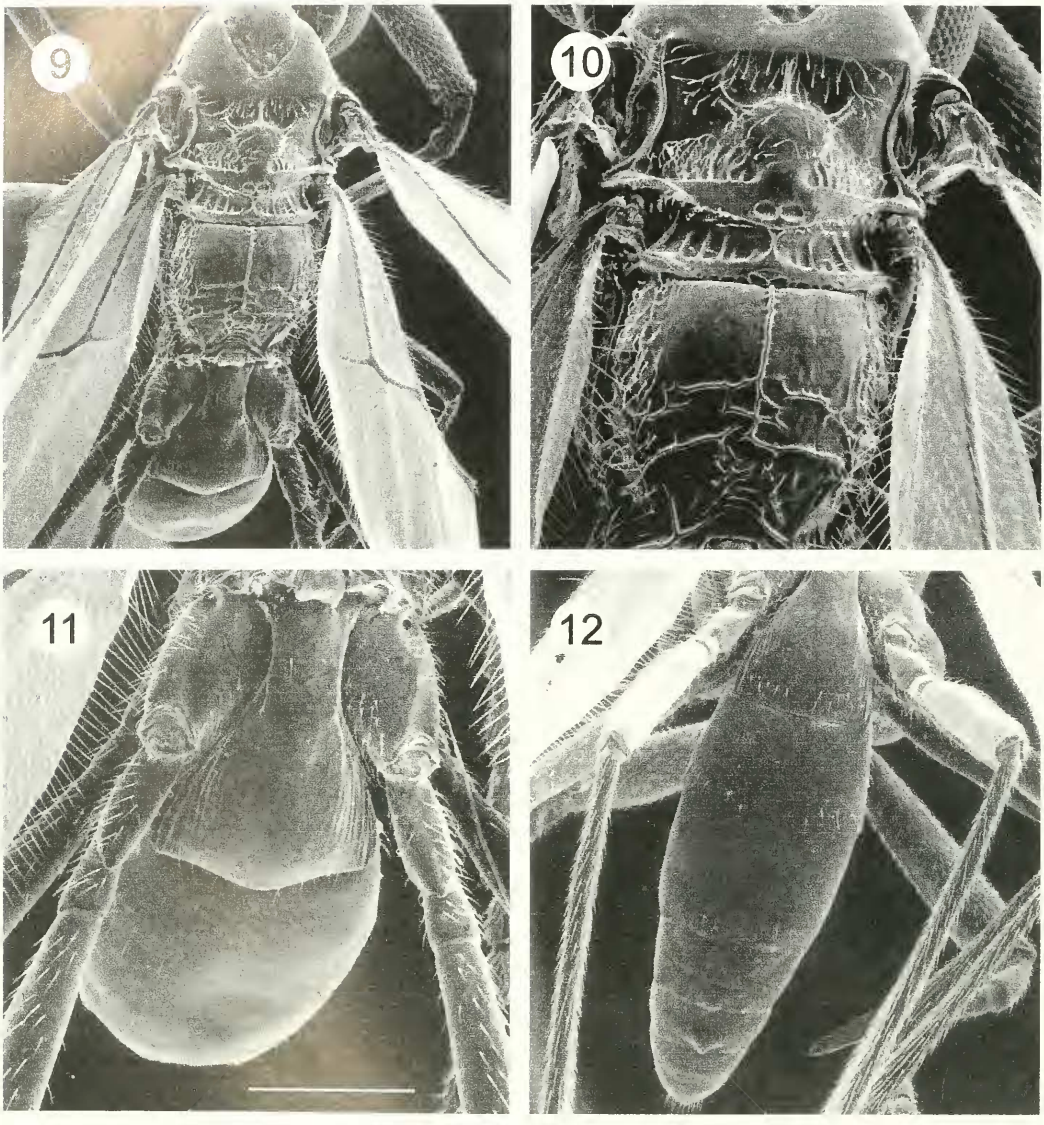
Figs. 1–4. *Streblocera* (*Asiastreblocera*) *olivera* sp. n., female paratype, scanning electron micrographs. 1, Head, dorsal view. 2, Head, facial view showing also, medioventral aspect of scapus with ridges, and an attached insect larva below mandibles. 3, Head, lateral aspect of facial horn. 4, Pronotum and mesoscutum, dorsal aspect. Scale bar (see Fig. 3): 1, 4 = 270 μm; 2 = 430 μm; 3 = 500 μm.

of fore femur: tibia: basitarsus = 2.0:2.35: 1.0. Hind femur: tibia: basitarsus = 2.2:3.0: 1.0. Hind tibial spurs almost equal in length, each 0.25× length of hind basitarsus. *Metasoma*: First tergite with fine longitudinal striation postero-laterally (Fig. 11);. remaining tergites completely smooth; suture between 2nd and 3rd tergites almost indistinguishable. 1st tergite 1.65× longer than maximally wide; maximum width 3.1× minimum width; distance from spiracles to posterior margin of tergite 1.25× distance between spiracles; dorsopes very deep, separated from each other by an internal septum, visible through cuticle. 2nd tergite with a single



Figs. 5–8. *Streblocera* (*Asiastreblocera*) *olivera* sp. n., female paratype, scanning electron micrographs. 5, 1st flagellar segment showing 3 ridges on dorso-medial surface. 6, Scapus, pedicellus and base of flagellum, arrows indicating ridges. 7, Detail of pedicellus, ventro-lateral aspect showing transverse basal groove with row of short sensilla. 8, Anterior mesosoma, lateral aspect. Scale bar (see Fig. 7): 5 = 150 μm; 6 = 270 μm; 7 = 30 μm; 8 = 380 μm.

transverse row of seta subposteriorly (Fig. 12). Tergites 4 and 5 with distinct medioposterior protuberance (Fig. 12). Sternum 8 of metasoma with a single, medioposterior, apically rounded projection. Ovipositor very short, not extending beyond the apex of the hypopygium; markedly dorso-ventrally depressed, apically transverse in dorsal profile (Figs. 15, 16). Area between hypopygium and terminal tergites setose (Fig. 16). *Colour*: Body pale brownish yellow, the propodeum medioposteriorly and the anterolateral parts of the 1st metasomal tergite, somewhat dark-



Figs. 9–12. *Streblocera* (*Asiastreblocera*) *olivera* sp. n., female paratype, scanning electron micrographs. 9, Mesosoma, wings and 1st metasomal tergite, dorsal aspect. 10, Scutellum, metanotum and propodeum detail. 11, 1st metasomal tergite showing fine lateral striations. 12, Metasoma, showing small medio-posterior protuberances of tergites 4 and 5. Scale bar (see Fig. 11): 9, 11 = 200 μm; 10, 12 = 100 μm.

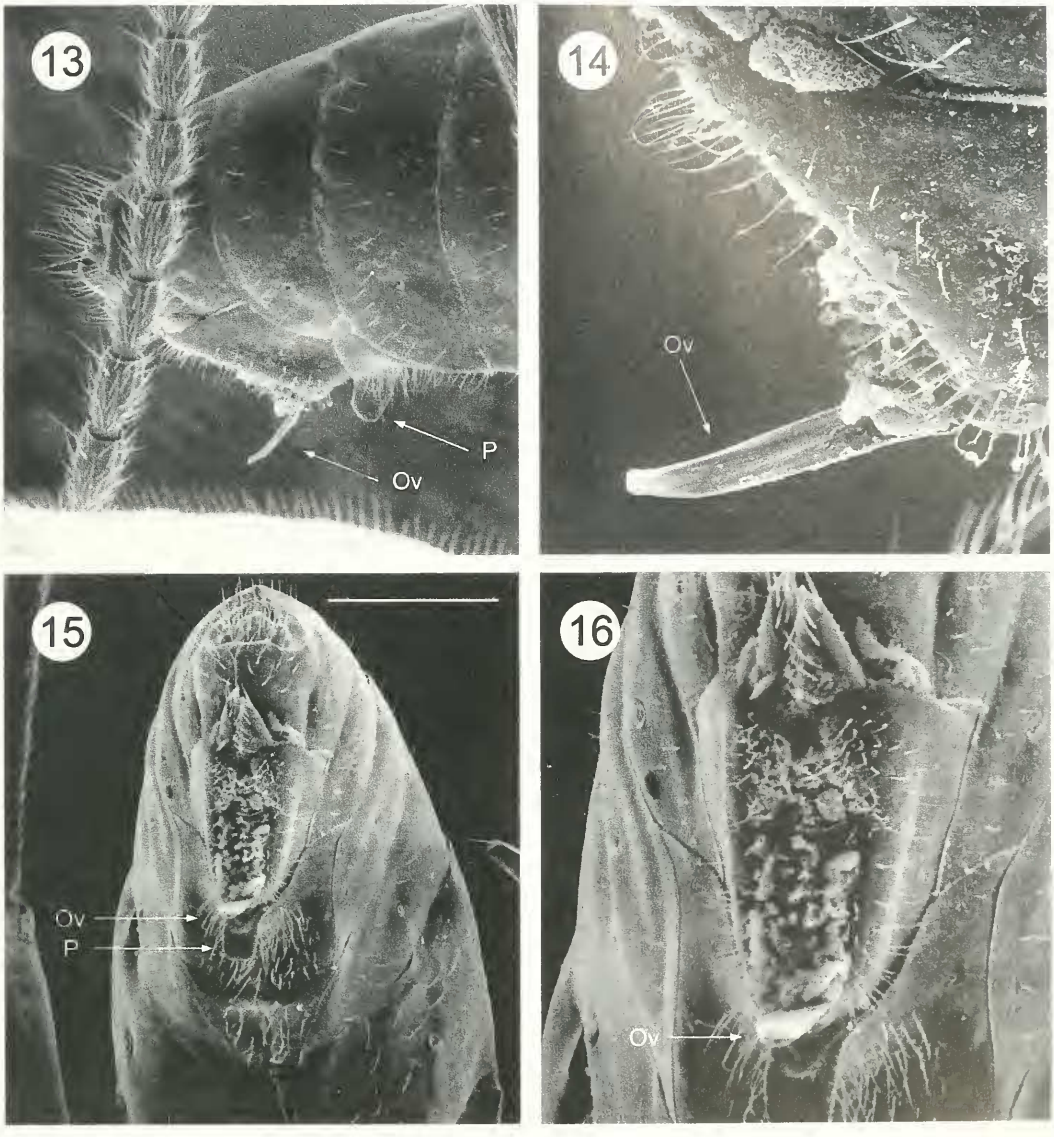
er, the legs and face whitish. Antenna brown.

Male.—Unknown.

Etymology.—Named after Oliver Purvis.

DISCUSSION

Most euphorines have moderately to highly modified ovipositors that are associated with oviposition into adult insects, and their hosts often have highly sclerotized exoskeletons. Thus euphorine ovipositors mostly appear adapted to penetrating intersegmental membranes or similar vulnerable places on the host, and the typical adaptation is moderate to strong lateral compression (see Achterberg and Quicke 2000). A few euphorines have solved the problem differently, for



Figs. 13–16. *Streblocera* (*Asiastreblocera*) *olivera* sp. n., female paratype, scanning electron micrographs. 13, Apex of metasoma, lateral aspect, showing ovipositor (Ov) and protuberance (P) from 5th metasomal sternite. 14, Detail of ovipositor from dorso-lateral aspect. 15, Postero-ventral view of apex of metasoma showing showing ovipositor (Ov), protuberance (P), and 'secretion' covered seta between ovipositor and ovipositor sheaths. 16, Detail of apex of ovipositor showing its dorso-vental compression. Scale bar (see Fig. 15): 13, 16 = 250 μm; 14 = 300 μm; 15 = 136 μm.

example, species of *Spathicopsis* van Achterberg have a dorso-ventrally depressed and apically spatulate ovipositor, though unfortunately, their hosts are unknown (Chen and van Achterberg 1997). The dorso-ventral compression in some *Asiastreblocera*, including the new species, is interesting because it shows that it is possible to evolve from lateral compression (as in *S.* (*A.*) *cornuta* Chao (*vide* Chen and van Achterberg 1997: Fig. 49)—perhaps through an almost cylindrical intermediate whose mode of function we can not guess at.

Although there has been speculation that the modified antennae in *Streblocera* may be involved in holding their beetle hosts, there have been no actual observations of this. The presence of diagonal striations on both the scapus and the ventral surface of the 1st flagellar segment is not unique to the new species described here (Xuexin X. Chen, personal communication) though there function is not known. They may be involved in host-restraint/manipulation, but it is also possible that they might act as stridules for sound production.

The setae in the anal area of all specimens examined are covered with an apparently congealed substance (Figs. 15, 16). If this material is a secretory product, it be involved in some marking function. Unfortunately, such congealed materials are often ignored by taxonomists making it difficult to assess both their taxonomic distribution and how consistent they are within a taxon. In addition, *S.* (*A.*) *olivera* has the 4th and 5th metasomal sternites particularly densely setose, but these setae are not covered in secretion and their function is unknown though they could be sensory.

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